

A. TSZ 4

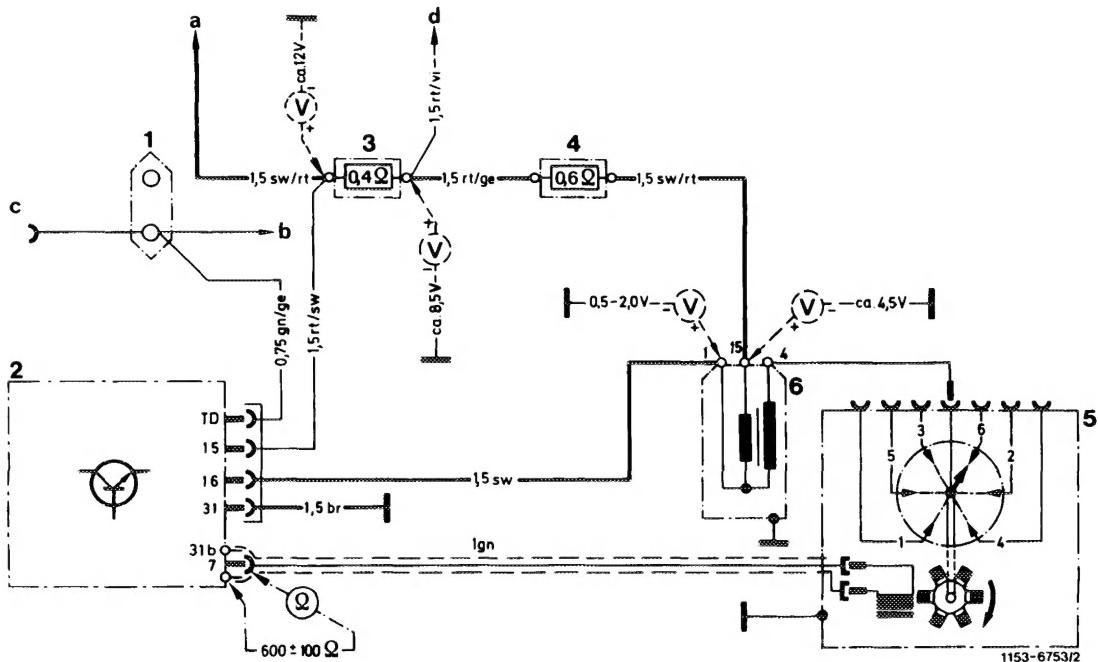
Conventional testers

Voltmeter, ohmmeter, dwell angle measuring instrument, revolution counter

Test values

Rest potential battery	approx. 12 V	
Voltage ignition coil	Terminal 1 and ground	0.5–2.0 V
	Terminal 15 and ground	approx. 4.5 V
Input voltage pre-resistor (series resistor)	approx. 12 V	
Dwell angle at	primary terminal 1 and 15	0.33–0.46 Ω
	secondary terminal 1 and 4	7–12 kΩ
Transmitter resistance between terminal 7 and 31d	600 ± 100 Ω	
Transmitter coil with control line terminal 7 and ground	∞	
Dwell angle at	approx. 1500 rpm	33–51 °
	approx. 5000 rpm ¹⁾	45–55°

¹⁾ Perform dwell angle test at 5000 rpm only if complaints refer to misfiring at high speeds.



Wiring diagram breakerless transistorized ignition TSZ 4

- 1 Double cable connector
- 2 Switching unit
- 3 Pre-resistor 0.4 Ω
- 4 Pre-resistor 0.6 Ω
- 5 Ignition distributor with transmitter section
- 6 Ignition coil

- a Ignition switch terminal 15
- b Instrument cluster, revolution counter
- c Diagnosis socket
- d Terminal 16 starter

Color code:
 br = brown
 ge = yellow
 gn = green
 rt = red
 sw = black

Note

In the event of complaints about misfiring, test high voltage side of ignition system first (spark plugs, ignition cable, spark plug connectors).

If the complaints refer to firing of engine, complete the following tests on ignition system in addition to tests at fuel end:

Gefährliche Hochspannung!
 Vorsicht bei Arbeiten an der Zündanlage

Danger! High voltage
 Observe caution when working on the ignition system

Danger! Haute tension
 Attention lors de travaux au système d'allumage

1154-9352

Visual checkup

Check electrical screw connections and plug connections of ignition system for tight seat.

Voltage test

Note: With the ignition switched on and the engine stopped a primary current of approx. 8 amps will flow continuously through system.

1 Input voltage at series resistor 0.4

Cable color black/red:

Rated value approx. 12 volts

2 Voltage at ignition coil at approx. 20 °C:

Terminal 15 and ground = approx. 4.5 volts

Terminal 1 and ground = 0.5–2.0 volts

a) If value at terminal 1 is exceeded, the switching unit is defective and should be replaced.

b) If value at terminal 1 is attained, but no ignition voltage (ignition spark) is induced, check transmitter section in ignition distributor and secondary winding of ignition coil.

Resistance values of ignition coil:

Primary winding terminal 15 and terminal 1 =
0.33–0.46 Ω .

Secondary winding terminal 1 and terminal 4 =
7–12 kΩ

Testing dwell angle

Note: The dwell angle cannot be adjusted. Testing is a functional inspection of switching unit (dwell angle control).

Connect dwell angle measuring unit (connection similar to SI standard switching unit).

Rated value at

Engine speed	Dwell angle
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1500 ± 50/min	33–51 °
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5000 ± 50/min ¹⁾	45–55 °
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¹⁾ Test at 5000/min only in the event of complaints about misfiring at high speeds.

If this value is not attained when measuring dwell angle, check ignition distributor transmitter section first. If transmitter section is in order, replace switching unit.

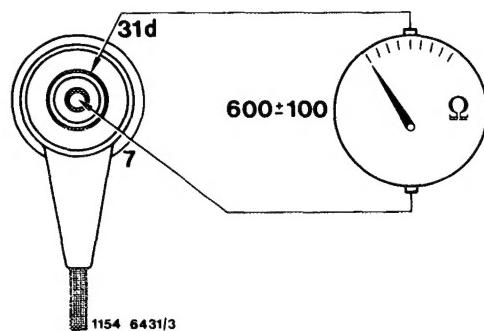
Testing ignition distributor transmitter section

Pull control line of ignition distributor from switching unit and connect ohmmeter.

- Check transmitter resistance between terminal 7 and 31 d.

Rated value: $600 \pm 100 \Omega$

Note: On cold engine, the ohmic value should be in lower half of specified value, on warm engine in upper half.

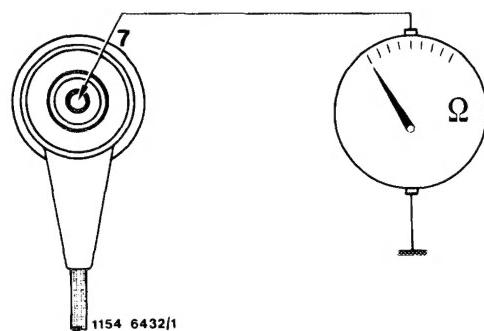


- Test transmitter coil including control line for ground connection between terminal and ground.

Rated value: ∞

- Check transmitter for mechanical damage. Check for presence of air gap between rotor and stator.

Note: If the transmitter section is defective, replace complete ignition distributor.



B. TSZ 8 u

Conventional test instruments

Voltmeter, ohmmeter, dwell angle measuring instrument, revolution counter

Digital tester e. g. made by Bosch, MOT 001.03

Test values

Resistors

Ignition coil	primary (terminal 1 and 15)	approx. $0.5\text{--}0.9 \Omega$
	secondary (terminal 1 and 4)	$6\text{--}16 \text{k}\Omega$
Distributor cap		$1 \text{k}\Omega$
Distributor rotor, spark plug connector		$1 \text{k}\Omega$
Ignition distributor transmitter section	Resistance of winding	$600 \pm 100 \Omega$
	Resistance against ground	$\geq 200 \text{k}\Omega$

Voltages, stopped engine, ignition switched on

Terminal 15 (jack 5 diagnosis socket)

Battery voltage

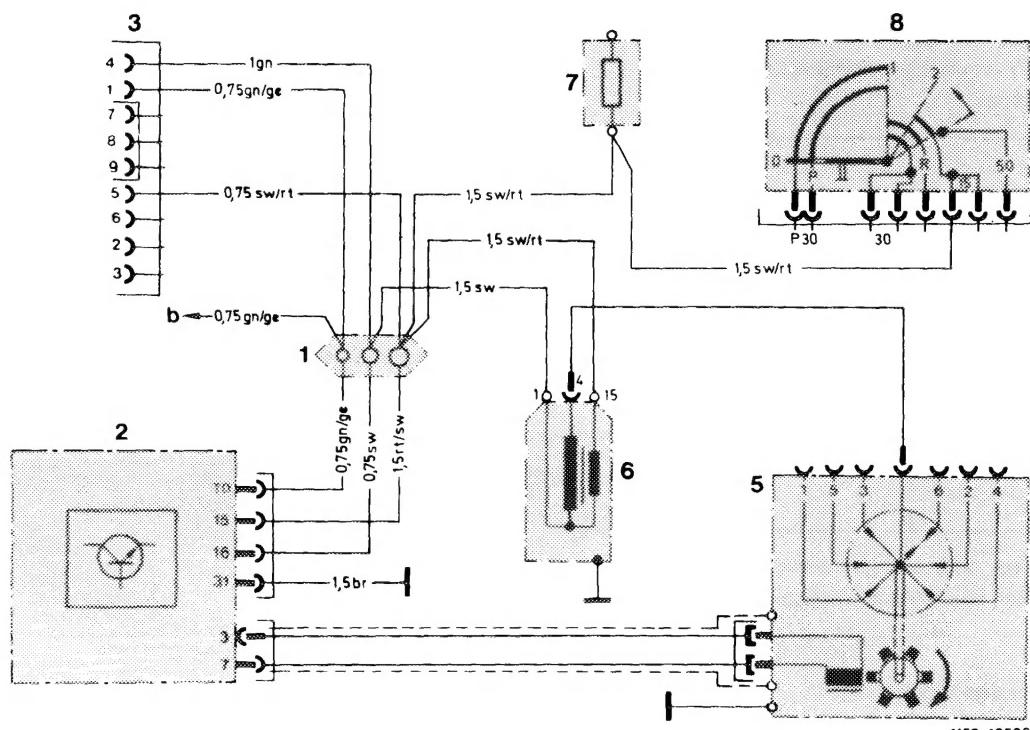
between terminal 15 and 1 (jack 5 and 4 diagnosis socket)

0 Volt

Dwell angle

Terminal TD at starting speed

from 7° to 25°

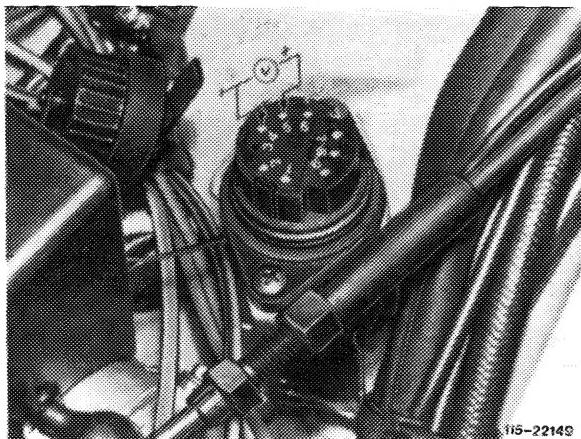
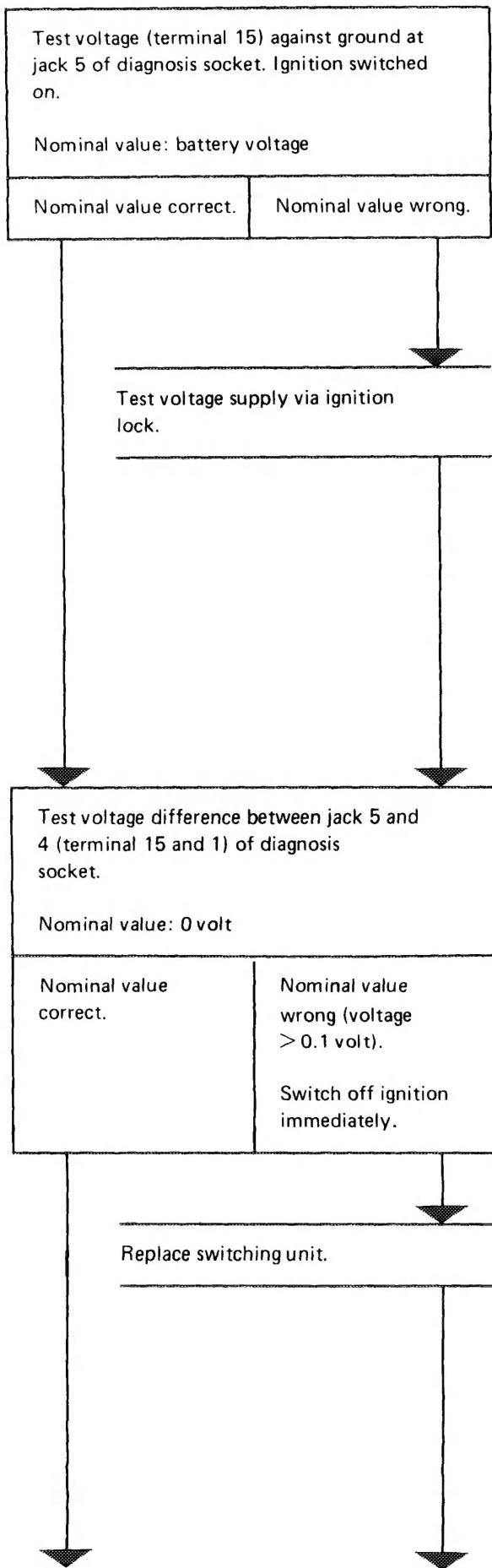


Wiring diagram breakerless transistorized ignition without pre-resistors TSZ 8 u

- | | | | |
|---|-------------------------|---|----------------------------------------|
| 1 | Line connector | b | To fuel pump relay with rpm limitation |
| 2 | Switching unit | | |
| 3 | Diagnosis socket | | |
| 5 | Ignition distributor | | |
| 6 | Ignition coil | | |
| 7 | Fuse box terminal 15 | | |
| 8 | Ignition starter switch | | |

Color code
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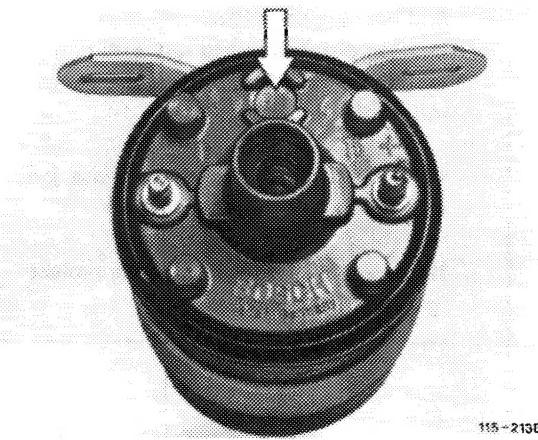
Test



Test plug in ignition coil and primary resistance of ignition coil (between terminal 1 and 15) 0.5–0.9 Ω .

With plug ejected or wrong ohmic value, replace ignition coil.

End of test.



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Test dwell angle at starting speed at diagnosis socket or terminal TD.

Nominal value: from 7–25°.

Nominal value correct.

Nominal value not indicated.

Nominal value higher than 34°

Replace switching unit.

End of test

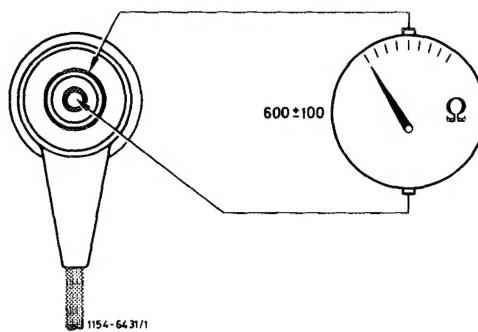
Test ignition distributor transmitter section for interruption and interturn short.

Pull off green control line on switching unit.
Test resistance with ohmmeter between terminal 7 and 3.

Nominal value: $600 \pm 100 \Omega$

Nominal value correct.

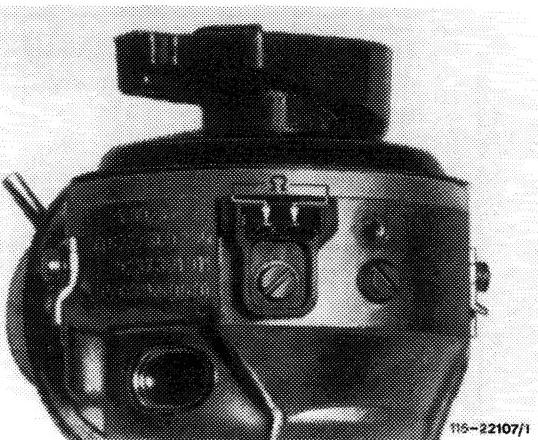
Nominal value wrong.



Pull off plug connection of green cable on ignition distributor and test with ohmmeter at plugs whether $600 \pm 100 \Omega$ is indicated.

If nominal value is attained, replace green cable.

If nominal value is not attained, replace ignition distributor.



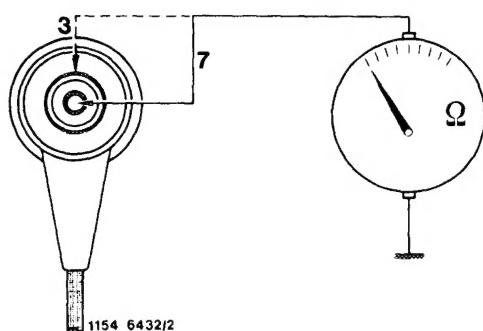
Test ignition distributor transmitter section for ground connection.

Pull off green cable on switching unit.
Connect ohmmeter to terminal 3 or 7 and to ground.

Nominal value: $\geq 200 \text{ k}\Omega$

Nominal value correct.

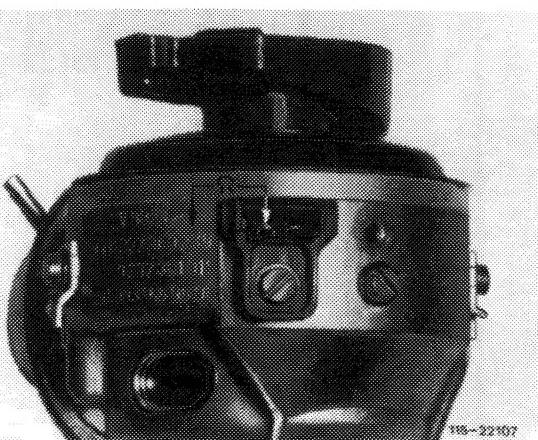
Nominal value wrong.



Pull off plug connection of green cable on ignition distributor. Test resistance against ground.

Nominal value at both plugs: $\geq 200 \text{ k}\Omega$

If nominal value is not attained at one plug, replace ignition distributor.



End of test